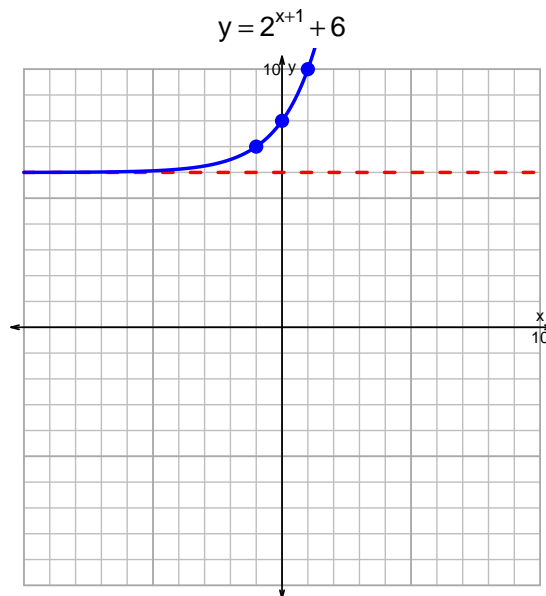
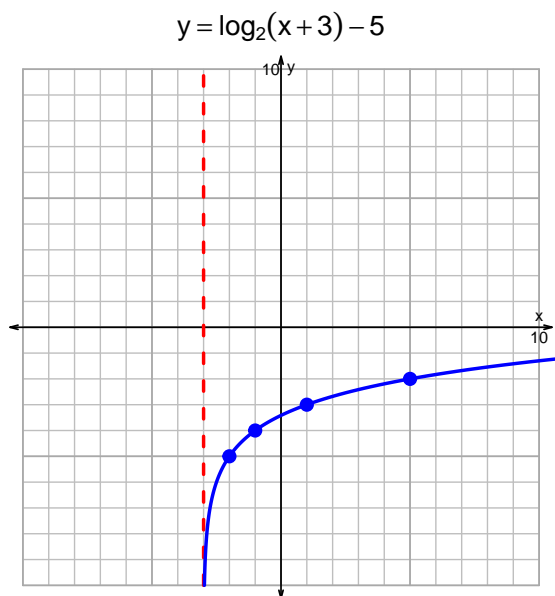


Name: _____

Date: _____

s18: EXP LOG (SLTN v327)

1. (10 pts) Graph $y = \log_2(x + 3) - 5$ and $y = 2^{x+1} + 6$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-13 = \left(\frac{-3}{7}\right) \cdot 2^{-4t/5}$$

Divide both sides by $\frac{-3}{7}$.

$$\frac{13 \cdot 7}{3} = 2^{-4t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{13 \cdot 7}{3}\right) = \frac{-4t}{5}$$

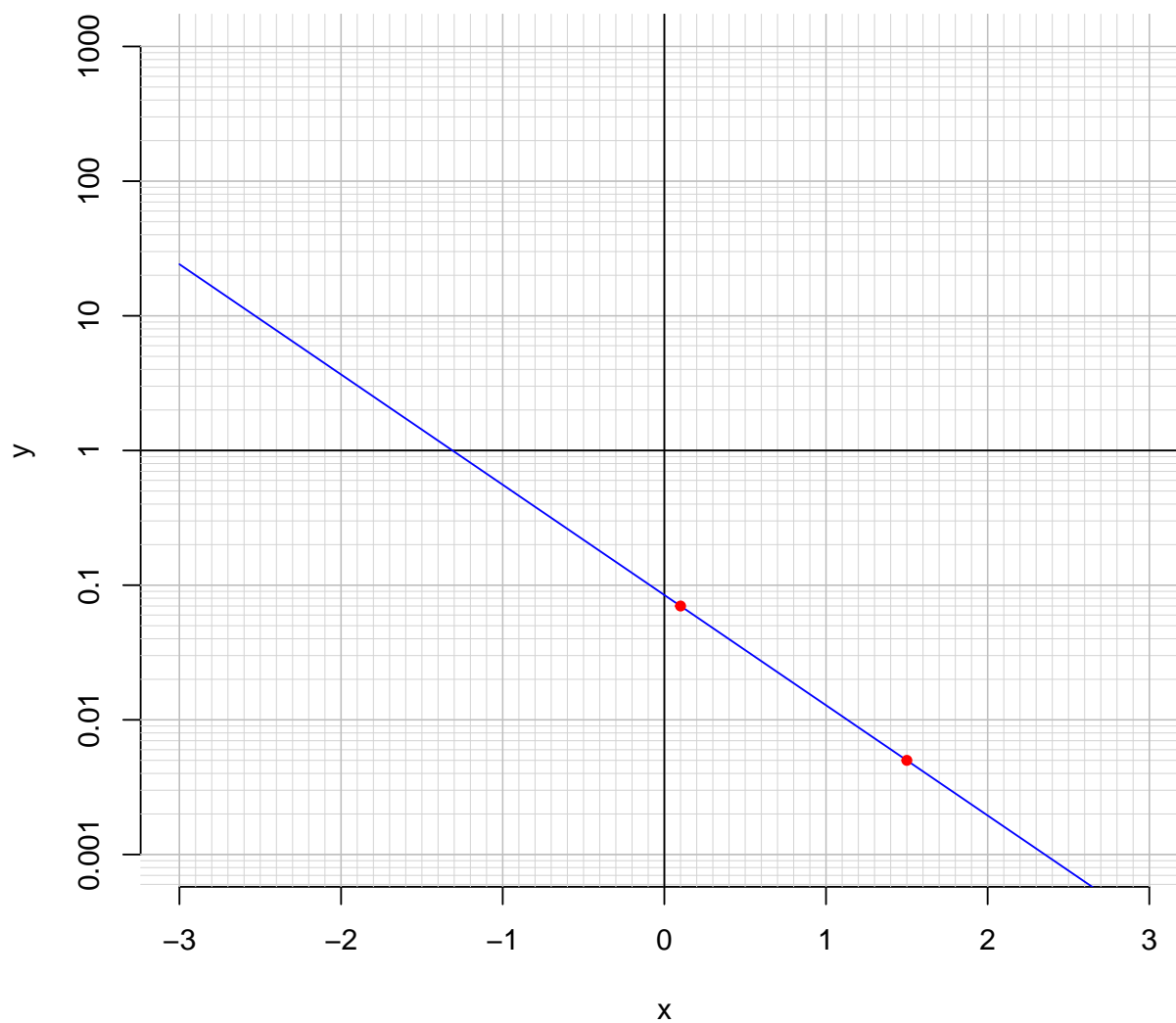
Divide both sides by $\frac{-4}{5}$.

$$\frac{-5}{4} \cdot \log_2\left(\frac{13 \cdot 7}{3}\right) = t$$

Switch sides.

$$t = \frac{-5}{4} \cdot \log_2\left(\frac{13 \cdot 7}{3}\right)$$

3. (10 pts) An exponential function $f(x) = 0.0845 \cdot e^{-1.89x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(1.5)$.

$$f(1.5) = 0.005$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{1.89} \cdot \ln\left(\frac{x}{0.0845}\right)$$

Using the plot above, evaluate $f^{-1}(0.07)$.

$$f^{-1}(0.07) = 0.1$$